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Technological management and the Rule of Law

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1. Introduction

In a number of papers, I have proposed that lawyers should take an interest in the use of 'technological management'; I have suggested that the idea of the 'regulatory environment', comprising both a normative (rule-based) and non-normative (technologically managed) dimension, will serve to frame juristic inquiries related to this phenomenon; and, I have emphasised the urgency of opening such inquiries so that, in particular, we can more clearly understand how the ideals of the Rule of Law and of legality might be applied to a regulatory strategy that relies, not on rules, but on technological applications in order to channel and steer human conduct.[1] The purpose of this paper is to present my first sketch of how these ideals should be applied.[2]

In order to develop this sketch, this paper responds to four questions that we might ask about the implications of technological management relative to the values that we associate with the

[*] I tried out some of the ideas in this paper at a workshop on 'Ethical Rationalism and the Law' at the University of Durham (October 15-16, 2015), in giving the Knut Selmer Memorial Lecture 2015 at the University of Oslo (November 4, 2015), and in my Mason Institute Winter Lecture at the University of Edinburgh (January 14, 2016). I am grateful for the many questions and comments received following those presentations. I am also extremely grateful to Mireille Hildebrandt and to Bert-Jaap Koops, each of whom read and then returned detailed and invaluable comments on a draft version of the paper, and to William Lucy for help with the Rule of Law. Needless to say, the usual disclaimers apply.

[1] Roger Brownsword, 'Lost in Translation: Legality, Regulatory Margins, and Technological Management' (2011) 26 *Berkeley Technology Law Journal* 132; 'Comparatively Speaking: "Law in its Regulatory Environment"' in Maurice Adams and Dirk Heirbaut (eds), *The Method and Culture of Comparative Law* (Festschrift for Mark van Hoecke) (Oxford: Hart, 2014) 189; 'In the Year 2061: From Law to Technological Management' (2015) 7 *Law, Innovation and Technology* 1; 'Field, Frame and Focus: Methodological Issues in the New Legal World' in Rob van Gestel, Hans Micklitz, and Ed Rubin (eds), *Rethinking Legal Scholarship* (Cambridge: Cambridge University Press, 2016); and, '*Law as a Moral Judgment*, the Domain of Jurisprudence, and Technological Management' in Patrick Capps and Shaun D. Pattinson (eds), *Ethical Rationalism and the Law* (Oxford: Hart, 2016).

[2] Any discussion of the central issues in this paper invites the question of how we are to understand the concept of law, together with the associated concepts of legality and the Rule of Law. For an opening of such questions (albeit in another context), see, Mireille Hildebrandt, 'Radbruch's *Rechtstaat* and Schmitt's Legal Order: Legalism, Legality, and the Institution of Law' (2015) 2:1 *Critical Analysis of Law* 42, available at http://cal.library.utoronto.ca/index.php/cal/article/view/22514/18311 (accessed February 8, 2016). My own legal idealist understanding goes back more than three decades to Deryck Beyleveld and Roger Brownsword, 'Law as a Moral Judgment versus Law as the Rules of the Powerful' (1983) 28 *American Journal of Jurisprudence* 79; and *Law as a Moral Judgment* (London: Sweet and Maxwell, 1986; reprinted, Sheffield: Sheffield Academic Press, 1994). Accordingly, against legal positivists, my reading of Fuller's principles of legality is, indeed, as an inner *morality* of law; and my reading of the Rule of Law derives from the discussion of constitutionality in *Law as a Moral Judgment*. However, in this paper, I have generally distanced the discussion from the substantive (Gewirthian) principles that lie at the core of my legal idealism—whether, and precisely how, Gewirthian substantive principles might *distinctively* constrain the use of technological management is a question for another paper. See, further, Parts 3 and 6.

Rule of Law. There might well be other questions to be asked but these four, and especially (in this paper) the third of the questions, strike me as ones that we might usefully address.

The questions are as follows. First, because technologically managed environments are designed to guarantee that the regulatory purposes are achieved, they are the perfect example of instrumentalist reasoning. If, as some (including myself) might think, pure instrumentalism (in the sense of treating persons as mere objects) is incompatible with the Rule of Law, does it follow that technological management is necessarily in tension with the values and virtues of the Rule of Law? Secondly, where the Rule of Law is observed, the existing rule framework provides the initial reference point for judging whether there has been an abuse of power. Is technological management susceptible to the same kind of judgment? Thirdly, because the standard Fullerian concept of legality presupposes that we are dealing with an enterprise of rules,[3] can the principles of legality be applied to the quite different strategy of technological management? Indeed, we might wonder whether there is any point in trying to assess the applicability of rule-related legality to technologically-achieved management. Fourthly, given that technological management is designed to exclude certain options and to compel certain acts, and given that this has implications for the possibility of acting freely in line with one's moral judgments, are there some uses of technological management that the Rule of Law should place off limits? Or, to put this another way, even if a *rule* that prohibits the doing of x would satisfy the Rule of Law, are there additional requirements before the use of technological management (rather than rules) to exclude the possibility of doing x will also satisfy the Rule of Law?

The paper is in six principal parts. In the first two parts, I speak to a couple of preliminary matters: first (in Part 2), with regard to the concept of technological management, I speak to the way in which an implicit normative position might be read into what presents as a non-normative regulatory instrument; and, then (in Part 3), I say a few words about the heavily contested concept of the Rule of Law. I then address each of the four organising questions. Part 4 focuses on the concern about instrumentalism; Part 5 considers how it might be claimed that technological management involves an abuse of power; Part 6 revisits the Fullerian principles of legality in a context of technological management; and Part 7 sets out some limits that a community with moral aspirations might wish to place on the use of technological management.

2. The concept of technological management: linking the normative to the non-normative

In my previous papers, I have been at pains to contrast traditional (normative) rule-based regulatory instruments with (non-normative) measures of technological management: whereas the former speak the language of 'oughts', signalling to regulatees which acts are prohibited, permitted, or required, the latter speak the language of 'can' and 'cannot', signalling to regulatees which acts are possible and which impossible. For the purposes of understanding and assessing the changing complexion of the regulatory environment, this

[3] See Lon L. Fuller, *The Morality of Law* (New Haven: Yale University Press, 1969).

contrast is crucial. However, for present purposes, the point that I wish to draw out is the importance of recognising the continuing link between the regulators' normative intentions and the translation of these intentions into a technologically managed environment.[4]

The clearest example of this link is where there is already a rule that prohibits x (such as taking golf carts off course and using them for joy-riding, or wheeling supermarket trolleys off site and abandoning them) but, because the rule is ineffective, regulators resort to technological management to eliminate the possibility of x (using GPS to redesign the carts and trolleys so that they are immobilised once they reach their permitted limits). Even if the rule that prohibits x is superseded by technological management and 'retired', it is not entirely redundant because it expresses the regulators' normative view (namely, that regulatees ought not to do x). The significance of this linkage is that it suggests one way of testing whether a particular use of technological management satisfies the Rule of Law. Quite simply, if the *rule* to which the technological management is linked satisfies the Rule of Law, then (assuming that the technological measures are congruent with the rule, and unless there are additional requirements for the use of technological management) the particular use of technological management also satisfies the Rule of Law.[5]

In a case where there is not already a rule that prohibits x, but where the regulator clearly believes that regulatees ought not to do x, then the use of technological management by the regulator to make it impossible to do x can be tested for Rule of Law compliance in a similar way. Here, the linkage is between the use of technological management and the rule that regulators would have put in place if they had adopted a rule that prohibits x. If such a rule would not have satisfied the Rule of Law, then the measures of technological management will also fail to do so. Conversely, if such a rule would have satisfied the Rule of Law, then technological management will also be compliant unless there are additional requirements for the use of such regulatory measures.

Accordingly, where non-normative technological management is linked in this way to an implicit normative view, the regulatory position is as follows:

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4 Two other points to emphasise are: (i) by focusing on technological management, I am putting in the spotlight an extreme case—technological measures that aim to compel regulatees to do x, or to eliminate the possibility of them doing z (even if x and y remain possible), go well beyond a 'nudge'; and (ii) by focusing on technological management as an ideal-type, I might be departing from what is realistically practicable for regulators—for example, in practice, there might be problems with technological malfunction and failure as well as regulatee counter-measures and workarounds. Compare, e.g., Charles Fried, 'Perfect Freedom or Perfect Control?' (2000) 114 *Harvard Law Review* 606.

5 Compare Lodewijk Asscher, '"Code" as Law. Using Fuller to Assess Code Rules' in E. Dommering and L. Asscher (eds), *Coding Regulation: Essays on the Normative Role of Information Technology* (The Hague: TMC Asser, 2006) 61, at 86:

> Code can present constraints on human behaviour that can be compared with constraints by traditional laws. We have argued that even though code is not law, in some instances it can be useful to ask the same questions about code regulation as we do about traditional regulation. Code as law must be assessed by looking at the results of regulation in terms of freedom and individual autonomy and compared to the balance struck in traditional law.

- a regulator, R, has a view about whether regulatees should be required to, permitted to, or prohibited from doing x (the underlying normative view)
- R's view could be expressed in the form of a rule that requires, permits, or prohibits the doing of x (the underlying rule)
- but, R uses (or directs others to use)[6] technological management rather than a rule
- and R's intention in doing so is to translate the underlying normative view into a practical design that ensures that regulatees do or do not do x (according to the underlying rule)
- the ensuing outcome being that regulatees find themselves in environments where the immediate signals relate to what can and cannot be done, to possibilities and impossibilities, rather than to the underlying normative pattern of what ought or ought not to be done.

So far, so good: however, in previous papers, I have given technological management a broad sweep, ranging across the design of products, the automation of processes, the architecture of places, and even the modification of persons.[7] In some of these cases, the link to a normative regulatory intent might be much less clear.

Suppose, for example, that a supermarket decides, for reasons of efficiency, to automate shelf-stacking. This use of technological management results in the loss of shelf-stacking jobs; and, in due course, it becomes impossible to find work stacking supermarket shelves. Yet, is it plausible to suggest that the supermarket has the view that humans ought not to be working stacking shelves? In other cases of automation, where the intention is to improve the conditions for human health and safety, it might be more plausible to suggest that the technological measures link to a normative regulatory intent. But, we could find ourselves agonising about how to characterise such cases—whether to treat them as cases of an implicit normative regulatory intent or as cases where technological management happens to have regulatory effects. For present purposes, I suggest that we simply reverse engineer all these cases, ignoring whether the regulators actually had a normative intention, and treat the questionable regulatory effect as if it were provided for by a rule or policy. Then, if the 'as if' rule or policy would satisfy the Rule of Law, the same applies to technological management—at any rate, it does so unless there are additional requirements for the use of such regulatory measures.

To illustrate, we can recall the famous and much-debated case of Robert Moses' bridges on the New York parkways. We can debate endlessly whether or not the design of the bridges was intended to have the (racially discriminatory) effect of making it more difficult for the

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6 See, further, my introductory remarks in Part 6.

7 See, e.g., 'In the Year 2061: From Law to Technological Management' (n 1) at 8, where I say: 'Distinctively, technological management—typically involving the design of products or places, or the automation of processes—seeks to exclude (i) the possibility of certain actions which, in the absence of this strategy, might be subject only to rule regulation or (ii) human agents who otherwise would be implicated in the regulated activities.'

poor, mainly black, population to reach the beaches on Long Island.[8] However, from the point of view of prospective beach-users, it made little difference whether the bridges had been designed with this intent—in practice, the bridges had the regulative effect of making the beaches more difficult to access; and, if regulatees wish to challenge the design on the basis that the Rule of Law is not satisfied, it might seem altogether too nice to have this question turn on whether the bridge designers had an underlying racially discriminatory normative regulatory intent. Rather, making the 'as if' assumption, we can ask whether a rule or policy having such a racially discriminatory effect would satisfy the Rule of Law; if it would not, the technological management reflected in the design of the bridges is not compliant.

3. The Rule of Law

When we ask whether a particular use of technological management satisfies 'the Rule of Law', some might respond: 'Well, it depends on what you mean by the Rule of Law.' This is a fair comment, for the Rule of Law means many different things to different people, sometimes being directed at 'lawless' governance, at other times at 'a lack of respect for the law' evinced by those subjects who break the rules. In this respect, Lisa Austin and Dennis Klimchuk are surely right in saying that, while there is 'widespread agreement' that the core elements of the Rule of Law 'are the principles that a right to exercise power arbitrarily cannot be conferred or upheld by law, and that anything that claims the status of law must be able to guide action',[9] there remains plenty of scope for disagreement. For example, the core principles themselves are open to interpretation: the idea of arbitrariness can be applied to more than one pathology of the exercise of power[10]; and, as I have pointed out elsewhere, there is now a major questionmark about whether instruments of technological management meet the 'action-guiding' test for laws.[11] Moreover, beyond the core principles, there is—to put it conservatively—'substantial disagreement' about such matters as the moral standards (if any) that are embedded in the Rule of Law and about its relationship with other ideals and values.[12] It follows that there is no unproblematic place either to start or to finish with one's conception of the Rule of Law.

Let me start, then, with my own understanding of the Rule of Law. Stated shortly, my understanding involves four related points:[13] first, the Rule of Law has to be read alongside

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8 See Noëmi Manders-Huits and Jeroen van den Hoven, 'The Need for a Value-Sensitive Design of Communication Infrastructures' in Paul Sollie and Marcus Düwell (eds), *Evaluating New Technologies* (Springer, 2009) 51, 54.

9 Lisa M. Austin and Dennis Klimchuk, 'Introduction' in Lisa M. Austin and Dennis Klimchuk (eds), *Private Law and the Rule of Law* (Oxford University Press, 2014) 1, at 1.

10 See, e.g., the careful analysis of 'arbitrariness' (applied to the criteria of legality) in William N. Lucy, 'The Rule of Law and Private Law' in Austin and Klimchuk (n 9) 41.

11 See, e.g., Roger Brownsword, 'In the Year 2061: From Law to Technological Management' (n 1).

12 Austin and Klimchuk (n 9) at 1.

13 See Beyleveld and Brownsword (n 2).

one's conception of law—it belongs to the same conceptual scheme; secondly, my conception of law is of a legal idealist kind, informed substantively by the principles associated with Alan Gewirth's moral theory, and realised in practice as a community of rights[14]; thirdly, because those substantive principles are open to interpretation and because communities of rights may reasonably disagree on particular moral questions, there has to be a strategy for resolving disputes and maintaining order in these harder cases; fourthly, that strategy is the Rule of Law, demanding on the one side a good faith attempt by legal officials to act in accordance with the community's moral values and, on the other, respect by citizens for such attempts where they are made (even though citizens might disagree with the official reading of what is morally required). In other words, the Rule of Law enjoins communities of rights to resolve their moral disagreements not by excluding moral reason from legal and regulatory decision-making but by respecting good faith attempts to engage with the difficulties and instate a provisional position. For the purposes of the present discussion, although I will stick with the idea of the Rule of Law as a compact between regulators and regulatees, I will not insist on the Gewirthian high ground (which is hotly contested and which might divert attention from the issue that I want to put in the spotlight, namely the possible applicability to technological management of the more commonly agreed features of the Rule of Law).

Accordingly, I will proceed on the basis that the ideal of the Rule of Law has two inter-linked core elements, one condemning arbitrary governance (as per Austin and Klimchuk) and the other condemning irresponsible citizenship. Viewed in this way, the Rule of Law represents a compact between, on the one hand, lawmakers, law-enforcers, law-interpreters, and law-appliers and, on the other hand, the citizenry. On the one side, we have a 'theory of (official) accountability'; on the other, we have a 'theory of (citizen) restraint'.[15] The understanding represented by the compact is that the actions of those who are in the position of the former should always be in accordance with the authorising constitutive rules (with whatever procedural and substantive conditions are specified); and that, provided that the relevant actions are in accordance with the constitutive rules, then citizens (including lawmakers, law-enforcers, law-interpreters, and law-appliers in their capacity as citizens) should respect the legal rules and decisions so made. In this sense, no one—whether acting off-line or on-line—is above the law[16]; and the Rule of Law signifies that the law rules.

Similarly, if we apply this ideal to the acts of regulators—whether these are acts that set standards, or that monitor compliance, or that take corrective steps in response to non-

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14 Seminally, see Alan Gewirth, *Reason and Morality* (Chicago: University of Chicago Press, 1978); and *The Community of Rights* (Chicago: University of Chicago Press, 1996).

15 See Beyleveld and Brownsword (1986) (n 2) Chs 7-9.

16 Compare Joel R. Reidenberg, 'Technology and Internet Jurisdiction' (2005) 153 *University of Pennsylvania Law Review* 1951, resisting the claims of the 'Internet separatists' and defending the application of the Rule of Law to on-line environments.

compliance—then those acts should respect the constitutive limits and, in turn, they should be respected by regulatees provided that the constitutive rules are observed.[17]

In principle, we might also—and, indeed, I believe that we should—apply the ideal of the Rule of Law to technological management. The fact that regulators who employ technological management resort to a non-normative instrument does not mean that the compact is no longer relevant. On the one side, it remains important that governance—now in the form of power exercised through technological management—is properly authorised and limited; and, on the other, although citizens might have less opportunity for 'non-compliance', it is important that the constraints imposed by technological management are respected. To be sure, the context of regulation by technological management is very different to that of a normative legal environment but the spirit and intent of the compact remains relevant.

The compact represented by the Rule of Law hinges on reciprocal constraints—first, constraints on the way in which the power of the Law is exercised by its institutions, its officers, and its agents; and, secondly, constraints on citizens who are expected to respect laws that are properly made. However, in at least two respects, this compact is unstable. First, if there is defection on either side, and if this escalates, then there can be a downward spiral that leads to a breakdown of trust and even a breakdown in order. Secondly, the constitutive rules might be more or less constraining—for example, reflecting merely formal, or formal/procedural, or substantive requirements,[18] and thin or thick specifications. Depending on the detail of the constraining rules, this will shape how we interpret the line between arbitrary and non-arbitrary governance as well as whether we judge citizens to be acting responsibly or irresponsibly in their response to acts of governance.[19]

In a well-known thick substantive conception, the International Commission of Jurists' Declaration of Delhi recognises the Rule of Law as

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17 Compare Karen Yeung, *Securing Compliance* (Oxford: Hart, 2004).

18 See, e.g., Paul P. Craig, 'Formal and Substantive Conceptions of the Rule of Law: An Analytical Framework' [1997] *Public Law* 467. At 467, Craig explains that whilst formal conceptions 'address the manner in which the law was promulgated (was it by a properly authorised person, in a properly authorised manner, etc.); the clarity of the ensuing norm (was it sufficiently clear to guide an individual's conduct so as to enable a person to plan his or her life, etc.); and the temporal dimension of the enacted norm (was it prospective or retrospective, etc.)', they do not 'seek to pass judgment upon the actual content of the law itself.' By contrast, substantive conceptions 'wish to take the doctrine further. Certain substantive rights are said to be based on, or derived from, the rule of law. The concept is used as the foundation for these rights, which are then used to distinguish between "good" laws, which comply with such rights, and "bad" laws which do not.' For a conception that is neither straightforwardly formal nor substantive, see Hildebrandt (n 2), esp 54-57 for the way in which she draws a distinction between 'legalism' (roughly a formal requirement but, as in Craig, extendable to procedural features of a Fullerian kind) and the more demanding notion of 'legality' (where the institutional backcloth, particularly the courts, and the availability of effective remedies are critical).

19 Generally, see Joseph Raz, 'The Rule of Law and its Virtues' (1977) 93 LQR 195; and David Dyzenhaus, 'Recrafting the Rule of Law' in David Dyzenhaus (ed), *Recrafting the Rule of Law* (Oxford: Hart, 1999) 1.

> a dynamic concept for the expansion and fulfilment of which jurists are primarily responsible and which should be employed not only to safeguard and advance the civil and political rights of the individual in a free society, but also to establish social, economic, educational and cultural conditions under which his legitimate aspirations and dignity may be realized.[20]

By contrast, a thin version of the Rule of Law might demand only that acts of governance should be capable of guiding the behaviour of citizens; and this might be how we should interpret Lon Fuller's principles of the 'inner morality of law' which require rules of law to be published and prospective, to be clear, constant, and non-contradictory, and to be administered in a way that is congruent with their published terms, and so on.[21] However, unless further requirements are to be teased out of such thin versions, then, as Joseph Raz points out, they do not speak to 'how the law is to be made: by tyrants, democratic majorities or any other way'; and it 'says nothing about fundamental rights, about equality or justice.'[22] It follows that, if the only constraint on the power of the Law is whatever set of constitutive rules is adopted locally, and if these rules constrain only marginally, then the commitment to the Rule of Law might be some, but no great, improvement on unbridled power.[23] Although there might be some political contexts—for example, when a State is being rebuilt—where such an undemanding requirement might be sufficient to create the expectation that citizens will respect the law, in general, this will be an unreasonable demand. As a rule, where the constraints on the power of the Law are weak, the demand for respect by citizens will be correspondingly weak. The risk is that, before long, there will be no real commitment to the compact and the Rule of Law will be deployed rhetorically in what becomes a contest of power and persuasion.

There is also the possibility of internal tensions within the Rule of Law. For example, the 'negative' dimension of legality, holding that 'the highest concern of a legal system should be to protect the citizenry against an aggressive state' and insisting that the State should give citizens a fair warning that they are breaking the rules, might come into tension with the 'positive' dimension of legality 'which stands for consistency and completeness in the application of the law' and which emphasises the importance of the guilty being punished.[24] While the former (the 'shield' of the Rule of Law) tends to encourage restrictive (and literal) interpretation of penal statutes, the latter (the 'sword') encourages a broad reading of criminal

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20 Available at http://icj.wpengine.netdna-cdn.com/wp-content/uploads/1959/01/Rule-of-law-in-a-free-society-conference-report-1959-eng.pdf.

21 Fuller (n 3).

22 Raz (n 19) at 198. It might be possible to 'thicken up' the Fullerian version in both respects (both as to how the law is to be made and as to its substance). See, further, Part 6.

23 For a compelling discussion, see Judith N. Shklar, *Legalism* (Cambridge, Mass.: Harvard University Press, 1964).

24 See George P. Fletcher, *Basic Concepts of Criminal Law* (Oxford: Oxford University Press, 1998), both quotes at p. 207.

statutes 'with a view to capturing within their scope all those who are guilty or who can usefully be regarded as guilty.'[25]

It has to be conceded, therefore, that referring the legitimacy of the use of technological management to the Rule of Law is not unproblematic. The concept is contested.[26] Nevertheless, there is widespread agreement that the kind of procedural principles listed by Lon Fuller are at least an essential element of the Rule of Law;[27] and it is these principles that will be employed in Part 6 of the paper as a test for the legality of the use of measures of technological management.

4. Instrumentalism and technological management

The first of our four questions draws on the concern expressed by Brian Tamanaha that, in some legal orders, there has been a rise in 'instrumentalism'—for example, rules of law being brokered in political institutions by powerful interest groups and elites, without any concern for the larger public interest or common good—all with deleterious consequences for the Rule of Law.[28] Given that technological management might seem to be an example of instrumentalism writ large, we need to ask whether, for this reason, it is antithetical to the Rule of Law.

We can start by asking how respect for the Rule of Law conduces to good governance. According to Tamanaha, four ideals are fundamental to this project. These are:

> that the law is a principled preserver of justice, that the law serves the public good, that legal rules are binding on government officials (not only the public), and that judges must render decisions in an objective fashion based upon the law.[29]

Potentially, instrumentalist politics and adjudication is a threat to legality and good governance. However, provided that these fundamental ideals are respected, Tamanaha has no problem about instrumentalist reasoning—indeed, he says that the idea of law as a means

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25 *Ibid.*, at 209.

26 For a very helpful account of the historical contestation (reaching back to Aristotle) that is associated with the Rule of Law and of the way in which, in the present century, the concept can be meaningfully and productively contested, see Jeremy Waldron, 'Is the Rule of Law an Essentially Contested Concept (in Florida)?' (2002) 21 *Law and Philosophy* 137.

27 As Waldron (n 26) points out, Fuller's 'laundry list' has been adopted by many others, including John Finnis, in *Natural Law and Natural Rights* (Oxford: Clarendon Press, 1980) at 270. See, too, Cass R. Sunstein, *Legal Reasoning and Political Conflict* (Oxford: Oxford University Press, 1996), at 102-106, who following Fuller identifies the following six characteristics that are associated with the Rule of Law: clear, general, publicly accessible rules laid down in advance; prospectivity; conformity between law on the books and law in the world; hearing rights and availability of review by independent adjudicative officials; separation between lawmaking and law-implementation; and no rapid changes in the content of law as well as no contradictions or inconsistency in the law.

28 See, e.g., Brian Z. Tamanaha, *Law as a Means to an End* (Cambridge: Cambridge University Press, 2006).

29 *Ibid*., at 249.

to an end 'would be a positive component if integrated within a broader system with strong commitments to these four ideals.'[30] The pathology of instrumentalism arises where the use of legislatures and courts in pursuit of (partisan) ends together with the acts of officials within those institutions is no longer constrained by the Rule of Law. It follows, argues Tamanaha, that 'legislators must be genuinely oriented toward enacting laws that are in the *common* good or *public* interest'; that 'government officials must see it as their solemn duty to abide by the law in good faith; this duty is not satisfied by the manipulation of law and legal processes to achieve objectives'; and 'that judges, when rendering their decisions, must be committed to searching for the strongest, most *correct* legal answer; they must resist the temptation to succumb to the power they have to exploit the inherent indeterminacy of law to produce results they desire.'[31]

If the use of technological management, its overt instrumentalism notwithstanding, is to be compatible with the Rule of Law, what lessons should we take from Tamanaha? Clearly, Tamanaha's thesis is not that instrumentalism (or means-to-end reasoning) in itself is objectionable; rather, it is unconstrained instrumentalism (rather like the instrumentalisation of others, treating them only as a means and not also as an end) that is the problem. From Tamanaha's perspective, if there is a problem with technological management, it is that its use is not sufficiently or appropriately constrained—that its use does not comport with the public interest or the common good.

Quite which constraints are sufficient and appropriate, quite which conception of the common good or the public interest, quite which conception of justice is to be adopted, are matters that remain to be debated.[32] However, if the constraints set by the Rule of Law are so weak as to tolerate an instrumentalism that turns the institutions of (so-called) law into arenas for pure power politics, then there is a problem because the underlying compact is likely to break down. To expect citizens to respect the use of technological management, or the particular purposes served by technological management, in such circumstances is manifestly unreasonable; it puts an intolerable strain on the compact. If the Rule of Law is to have any chance of prospering, it needs to represent a significant constraint against instrumentalist thinking; the constitutive rules need to be acceptable to all sections of the community; and, regulators need to fully respect those rules and operate in accordance with them.

5. Technological management and abuse of power

Building on the closing remarks of the previous section, we come to our second question. How might we judge whether the use of technological management, by both public and private actors, involves an abuse of power? If the use of technological management is likened to the use of rules, then a minimum requirement is that such a strategy is used only in ways that accord with the constitutive rules, or any authorising or limiting rules made thereunder.

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30 *Ibid*.

31 *Ibid*., at 250 (emphases in original).

32 Nb my remarks about the application of substantive Gewirthian principles in n 2.

Or to put this another way, if the underlying rule in the paradigmatic case of technological management would be condemned as an abuse of power, then the same should apply to the technological instruments that are actually used. In principle, this applies to the use of technological management by both public and private regulators; and, any failure to respect the Rule of Law compact will be an abuse of power.[33]

There is more than one way in which it might be claimed that a particular use of technological management involves an abuse of power (and is, thus, inconsistent with the Rule of Law). For example, to anticipate our discussion of the Fullerian principles of legality, it might be argued that legality demands that the use of technological management should be expressly authorised (whether by general or particular authorising provisions) and that, in the instant case, there is no such authorisation; or that there has been a failure to follow an approved procedure for the adoption of technological management.[34] Or, to anticipate our later discussion of the special limits that might be imposed on the use of technological management, it might be argued that, in a particular case, the use is simply in breach of those limits. However, in this part of the paper, I want to focus on the claim that the content of the underlying rule is either incompatible with the positive laws of the legal system or incompatible with implicit cosmopolitan norms.

Where the positive law already protects certain interests, such that a rule impinging on those interests would be struck out as unconstitutional or ultra vires or unlawful, then technological management (and the underlying rule) will be susceptible to the same kind of challenge. In this vein, Lawrence Lessig famously flagged up the risk that digital rights management technologies might be used in ways that overreach the proprietors' lawful interests—for example, by denying some uses that would fall within one of the exceptions recognised by copyright law.[35] No doubt, we could generalise this concern. For example, to recall a case that provoked much discussion at the TELOS launch conference at King's College London in 2007, we might challenge the use of a device such as the 'Mosquito' (which emits a piercing high-pitched sound that is audible only to teenagers) in order to discourage young people from congregating (lawfully although inconveniently) outside shops or in other public places. On the other hand, where shopkeepers install technological management to prevent

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33 It is implicit in these remarks that I agree with Austin and Klimchuk (n 9) that it is a mistake to limit the application of the Rule of Law to the exercise of *public* power; the exercise of *private* power also needs to be tested for its 'legality'.

34 Where a community is committed to the ideals of deliberative democracy, it will be a condition of the Rule of Law that there needs to be a transparent and inclusive public debate about use of technological management as an element of a risk management package. It will be a condition that all views should be heard with regard to whether the package amounts to an acceptable balance of benefit and risk (including the benefits of risks of the use of technological management) as well as representing a fair distribution of such risk and benefit (including adequate compensatory provisions). Before the particular package can command respect, it needs to be somewhere on the spectrum of reasonableness. This is not to suggest that all regulatees must agree that the package is optimal; but it must at least be reasonable in the weak sense that it is not a package that is so unreasonable that no rational regulator could, in good faith, adopt it.

35 See Lawrence Lessig, *The Future of Ideas: The Fate of the Commons in a Connected World* (New York: Knopf Doubleday, 2002).

shoplifting or when supermarkets fit GPS to prevent the wheeling away of their trolleys, this is in line with the rules that already express norms that are supposed to protect their proprietary interests. The principle that governs such cases is clear: private power must be exercised in ways that are compatible with the protected legal interests of others as well as the larger public interest. So, whether copyright holders try to protect their interests by contract or by technology, they should do so only to the extent that this is consistent with the protected legal interests of others; and the same applies to Mosquito-using shopkeepers who would prefer teenagers to congregate some place else.

When we turn to the use of regulating technologies by public bodies, the principle is again clear. Public bodies must act within their lawful powers and in a way that is compatible with respect for the constitutive rules (including where they are recognised as constitutive, respect for human rights provisions).[36] Currently, when the criminal justice agencies are increasingly relying on tracking, monitoring, identifying, and locating technologies (such as, CCTV, GPS, RFID, and DNA profiling) respect for the right to privacy is the main restriction on unbridled use. In the *Marper* case,[37] the European Court of Human Rights has emphasised that the impingement on privacy must be 'proportionate'; and, in *Jones*, the United States' Supreme Court has affirmed the relevance of constitutional limits, specifically the Fourth Amendment, to chipping and tracking vehicles on public roads.[38] Similarly, we can assume that the interest in privacy—possibly in conjunction with freedom of conscience or religion or expression—would be an obvious basis for challenging a disproportionate future use of brain imaging or other scanning (e.g. thermal imaging) technologies.[39]

Strictly speaking, where technologies are employed for the purposes of surveillance, tracking, monitoring, identifying, and locating, and the like, they fall short of technological management—because, in these applications, they support the background criminal law without actually redesigning the regulatory environment in a way that eliminates the possibility of a particular action. Where regulatees are aware that they are under surveillance, they might be deterred from doing x; but they might not. By contrast, in an ideal-typical case of a technologically managed environment, regulatees would find that that it was simply not possible to do x. Nevertheless, so far as questions of abuse of power are concerned, the principle is the same: the employment and application of technological management must be consistent with whatever constitutive rules and principles authorise and limit its use.

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36 See Ben Bowling, Amber Marks, and Cian Murphy, 'Crime Control Technologies: Toward an Analytical Framework and Research Agenda' in Roger Brownsword and Karen Yeung (eds), *Regulating Technologies* (Oxford: Hart, 2008) 51.

37 *S and Marper v United Kingdom* [2008] ECHR 1581.

38 *United States v Jones* 132 S.Ct 945 (2012).

39 See *Kyllo v United States* 533 US 27 (2001) (police use of heat-sensing technology to detect domestic cannabis growing); and, for privacy and brain imaging, see Roger Brownsword, 'Regulating Brain Imaging: Questions of Privacy and Informed Consent' in Sarah J.L. Edwards, Sarah Richmond, and Geraint Rees (eds), *I Know What You Are Thinking: Brain Imaging and Mental Privacy* (Oxford: Oxford University Press, 2012) 223.

Going beyond the explicit authorising provisions and protections of a particular legal system, it might be claimed that some use of technological management is incompatible with fundamental 'cosmopolitan' values.[40] One such candidate, of course, is human rights; another is human dignity; and, in this spirit, we find Article 2(d) of the UNESCO Universal Declaration on Bioethics and Human Rights, 2005, recognising the importance of, and the benefits to be derived from, scientific and technological developments but emphasising that such developments should always 'respect human dignity, human rights and fundamental freedoms'. Of course, there are many legal systems that already embed these values in their positive constitutive rules; and, indeed, there is already a considerable jurisprudence associated with these values.[41] However, the cosmopolitan claim is that there are some values that are binding on regulators everywhere irrespective of whether they are recognised locally.

In this context, suppose that it is claimed that a particular use of technological management is incompatible with the cosmopolitan value of human dignity. For example, imagine that this were the objection levelled against the proposal that human prison officers should be replaced by robots—a proposal, let us suppose, that is backed by considerations of efficiency but also in order to eliminate the risk of prisoners assaulting and injuring human prison officers.[42] What should we say about such techno-management of prison conditions? Would this compromise human dignity? Guided by some of the jurisprudence (perhaps by the jurisprudence that has developed around Article 1 of the German Basic Law), it might be argued that human dignity condemns prison conditions that are judged to be demeaning or degrading.[43] Whether or not robotic prison officers would fall foul of this principle is a moot point. For example, it might be argued that, if prisoners are denied contact with human prison officers, then this treats them as less than human—in the language of the German constitutional jurisprudence, the prisoners are 'degraded to a mere object of state action.'[44] Do the robot prison officers really understand the difference between mere objects/things and human beings? On the other hand, those humans who design the prison management regimes do understand this difference and, if their designs reflect this understanding, then perhaps this suffices. Moreover, if cars and trains operated by robots do not offend the principle of human dignity, and if (as some accept) there is no fundamental problem about the use of robots to perform social caring functions, then why should robotic prisoner officers be any different?

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40 Compare Roger Brownsword, *Rights, Regulation and the Technological Revolution* (Oxford: Oxford University Press, 2008) Ch 7; and 'Regulatory Cosmopolitanism: Clubs, Commons, and Questions of Coherence' TILT Working Papers No 18 (2010).

41 See, Roger Brownsword, 'Human Dignity from a Legal Perspective' in M.Duwell, J. Braavig, R. Brownsword, and D. Mieth (eds), *Cambridge Handbook of Human Dignity* (Cambridge: Cambridge University Press, 2014) 1.

42 For the piloting of such a scheme in South Korea, see Lena Kim, 'Meet South Korea's New Robotic Prison Guards' Digital Trends (April 21, 2012): available at http://www.digitaltrends.com/international/meet-south-koreas-new-robotic-prison-guards/.

43 See, Deryck Beyleveld and Roger Brownsword, *Human Dignity in Bioethics and Biolaw* (Oxford: Oxford University Press, 2001) 14-15.

44 See, the *Honecker* Decision BerlVerfGH NJW 1993, 515, 517.

The problem with appeals to human dignity (whether as a recognised fundamental legal value or as a candidate cosmopolitan value) is that, as with appeals to the Rule of Law, the concept is deeply contested and it is subject to many competing interpretations. In fact, some see human dignity as underlying the Rule of Law because, by following the publicly declared rules, government and legal officials act in ways that are reasonably predictable which, in turn, enables citizens to plan their lives—that is to say, the Rule of Law is in line with respect for human dignity because it respects human autonomy.[45] However, more 'conservative' readings of human dignity—reflected in the view that we should not transfer our distinctively human responsibilities to robots[46]—tend to emphasise the limits on human autonomy. Faced with the all too familiar stand-off between those who appeal to 'human dignity as empowerment' in order to support access to new technologies and those who appeal to 'human dignity as constraint' (or simply to dignity) in order to resist access,[47] we might retreat to a position in which human dignity is equated with the capacity for moral reason. On this view, the distinctive dignity of humans resides in their capacity freely to do the right thing even when they have the opportunity to do the wrong thing.[48] From this perspective, the fundamental objection to Roboprison is that the conditions for the moral rehabilitation of offenders—now having reduced contact with other humans—are compromised.[49] If this line of thinking is correct, then it follows, as I have argued elsewhere,[50] that we need to monitor the changing complexion of the regulatory environment lest, through the use of technological management, the conditions for moral community are compromised; and, if we treat it as a defining characteristic of the Rule of Law that it serves human dignity in this sense, then we will judge that government abuses its powers where it resorts to technological management in this fundamentally compromising way.

6. Technological management and the generic ideals of legality

We come now to the third and largest of our questions. The context in which jurists have crafted their understanding of legality and of the Rule of Law is that of rules. As Cass

45 For example, Raz (n 19) explicitly takes the view.

46 Compare, Roger Brownsword, 'Regulating Patient Safety: Is it Time for a Technological Response?' (2014) 6 *Law, Innovation and Technology* 1.

47 See, Beyleveld and Brownsword (n 43).

48 See, Roger Brownsword, 'Human Dignity, Human Rights, and Simply Trying to Do the Right Thing', in Christopher McCrudden (ed), *Understanding Human Dignity* (Oxford: Proceedings of the British Academy and Oxford University Press, 2013) 470; and 'Developing a Modern Understanding of Human Dignity' in Dietmar Grimm, Alexandra Kemmerer, and Christoph Moller (eds), *Human Dignity in Context* (Berlin Hart/Nomos volume, 2016).

49 But the potential for rehabilitating contact with robots should not be ignored: see, e.g., Judith Newman, 'To Siri, With Love; How One Boy with Autism Became BFF with Apple's Siri' *The New York Times*, October 17, 2014: available at http://www.nytimes.com/2014/10/19/fashion/how-apples-siri-became-one-autistic-boys-bff.html?_r=1 (last accessed February 8, 2016).

50 Roger Brownsword, 'Lost in Translation: Legality, Regulatory Margins, and Technological Management' (n 1).

Sunstein remarks, 'A system of rules is often thought to be the signal virtue of a regime of law. Indeed, the rule of law might seem to require a system of rules.'[51] However, as regulators begin to rely on the non-normative design and coding that is characteristic of technological management, do the principles that we associate with legality continue to be applicable?

In a classic discussion of the ideal of 'legality', understood as a set of procedural requirements, Lon Fuller proposed that the standards set should be general, promulgated, prospective, clear, non-contradictory, (reasonably) constant, and possible (of compliance).[52] He also suggested that it was of the essence of the Rule of Law that enforcement should be congruent with the standards so promulgated. Where the standards are not promulgated, prospective, clear, non-contradictory, and (reasonably) constant, regulatees will simply not know where they stand; even if they wish to comply with the regulatory standard, they will not know what it is. If the standard set requires impossible acts of compliance, then ex hypothesi regulatees cannot comply. Reliance on highly specific regulations will drain most regulatory resource and, again, it will leave many regulatees unclear about their position. And, if there is a disconnect between the standards set and the enforcement practice, not only will regulatees be unclear about their position, they will lose respect for the regulatory regime.

For many years, jurists have debated whether the Fullerian principles speak only to the conditions for effective regulation or whether, as Fuller insists, they go to the heart of distinctively *legal* forms of regulation.[53] According to Fuller, there is a critical distinction between legal direction and mere managerial direction. As he puts it, 'law is not, like management, a matter of directing other persons how to accomplish tasks set by a superior, but is basically a matter of providing the citizenry with a sound and stable framework for their interactions with one another, the role of the government being that of standing as a guardian of the integrity of this system.'[54] Although, in the context of debates concerning the essential nature (or concept) of law, there is a fundamental choice between a moralised idea of law (evincing a necessary connection between law and morals) and an idea of law as a by and large effective institution for the direction of social life, it is a choice between one set of rules and another set of rules. On either conception of law, it is rules that are the currency; it is rules that are to be tested for their legality. For Fuller, as for his critics, law and

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51 Cass R. Sunstein (n 27) at 102.

52 Lon L. Fuller (n 3). For an application of the Fullerian principles to 'code', see Asscher (n 5) who concludes that the key normative procedural criteria that must be fulfilled are 'whether there are rules, whether those rules are transparent and consistent, whether there is any choice to obey the rules and how those rules relate to traditional legal rules' (p. 86). See, too, Bert-Jaap Koops, 'Criteria for Normative Technology: The Acceptability of 'Code as Law' in Light of Democratic and Constitutional Values' in Roger Brownsword and Karen Yeung (eds), *Regulating Technologies* (Oxford: Hart, 2008) 157; and, for an application of Fullerian principles to particular instances of cyberlaw, see Chris Reed, 'How to Make Bad Law: Lessons from Cyberspace' (2010) 73 MLR 903, esp at 914-916.

53 See, e.g., HLA Hart's review of *The Morality of Law*, at (1964-65) 78 *Harvard Law Review* 1281.

54 Fuller (n 3), at 210.

management alike operate with normative registers; they are traditional regulatory environments. However, what happens when we move into next generation regulatory environments, where non-normative signals (speaking only to what is practicable or possible) co-exist with normative signals, or even predominate? In such environments, there are many concerns for the virtues of the Rule of Law; but what should we make of the applicability of the Fullerian criteria?

Rather than dismissing out of hand the relevance of the Fullerian principles—on the ground that they relate only to normative regulatory strategies and not at all to non-normative strategies—we can consider briefly each of the principles, trying to capture its spirit and intent, with a view to understanding what it might signify for the acceptable use of technological management. In order to contextualise this discussion, let me suppose that the background is one of a working democracy with developed public institutions for policy-making and regulation. Now, let me also suppose that in such a polity, when the possibility of using new technologies for regulatory purposes is appreciated, it is accepted that proposals for the use of technological instruments (including full-scale technological management) should be properly debated and authorised. Ideal-typically, this means that measures of technological management will be employed for public purposes only after (i) the particular regulatory purposes, and the particular actions to be channelled, have been approved and (ii) the use of particular measures of technological management for such purposes has been authorised. Of course, before the particular measures of technological management that have been authorised actually take their place in the regulatory environment, before regulatees find that their practical options and possibilities have been altered, there is an important step of direction (to use technological management) and compliance. Indeed, the direction might take the form of a *rule* (sic) that requires, say, providers of products or services to adopt some form of technological management; and, to this extent, rules are still being used to channel conduct (in this case, the conduct of producers and providers of goods and services). However, for end users of such products or services, it is technological management rather than a rule that channels their conduct in relation to such products or services. Where technological management is to be used for private purposes, there might also be some processes for ex ante approval and authorisation; but, in the absence of such procedures, there would be processes for ex post challenge and review. Given that such a polity already seems to exhibit in a general sense important features that we associate with the Rule of Law, the question is: what purchase would the Fullerian principles of legality have on such a polity?

6.1 *Laws should be promulgated*

In the polity that we have hypothesised, we can take it that there will be a commitment to the idea that public rules and regulations should be promulgated. For Fullerians, if regulatees are to be guided by the rules, then they need to know what the rules are, they need to know where they stand. In particular, where there are penalties for non-compliance, regulatees need to be given a fair warning if they are at risk, a fair opportunity to avoid the penalty. Stated shortly, the rule book needs to be accessible to regulatees.

Contrast this with a regulatory space that is technologically managed: in such a controlled environment, there is no rule book to be consulted; the relationship between regulators and regulatees is no longer mediated by rules; the actions of regulatees are no longer rule-guided. Does it follow that the requirement of promulgation is no longer relevant? In the sense that I have just indicated—that is to say, for the guidance of regulatees—promulgation is no longer relevant. However, promulgation and, by implication, transparency in relation to the proposed use of technological management for public regulatory purposes is, I suggest, extremely relevant. What matters in an age of technological management is not that the rules that result from a 'law-making' process are published, but that proposals for the use of technological management are published. What matters is not so much that regulatees know where they stand, but that they have a fair warning that a particular use of technological management might be made for public purposes and, concomitantly, a fair opportunity to participate in the processes that will determine whether such a use is to be authorised. If this is correct, then 'promulgation'—not of rules, but of proposed uses of technological management—continues to be a critical ideal. There should be openness in authorising the use of technological management, in knowing that it is in operation, and arguably in knowing how it operates (otherwise there might be difficulties in challenging decisions made by the technology).

Suppose, for example, it is proposed (i) that the 'right to be forgotten' should be recognised and (ii) that the relevant interest should be protected by measures of technological management. So long as institutions are habituated to discussing regulatory proposals in the form of draft rules, this might be the way in which the proposal is expressed; but the purpose of doing this would not be to guide the conduct of regulatees so much as to focus public debate about the merits of protecting this particular interest. Assuming that it was agreed that the particular interest should be protected, then the next step would be to propose that some measure of technological management might be employed to give effect to the regulatory purpose. Again, the proposal might take the form of an authorising rule. However, the function of the rule would not be to guide the conduct of regulatees, but to mandate the use of technological management. To repeat: while the purpose of promulgating such rules for debate and discussion would be to secure the legality of the use of technological management, they would not be signals to regulatees guiding their conduct. That said, as I have already noted, following authorisation, there might be a rule that requires some class of regulatees (such as providers of search engine services) to adopt and implement the approved measures of technological management. For these regulatees, there would still be rules to be followed. However, for regulatees in general, respect for the right to be forgotten would not be provided for by a rule; rather, assuming compliance by the service providers, the outcome of the regulatory process would be a technologically managed environment in which it would not be possible to infringe the protected interest.[55] Unlike the Fullerian world, where the purpose of promulgation is to let regulatees know whether some act is permitted, in an age of

[55] Perhaps this is a good place to repeat my caveat in n 4: in practice, regulators might rarely, if ever, be able to realise the ideal of a perfectly controlled environment; technologies might fail; and regulatees might find ways around the technological fix. In practice, the 'impossible' might not be quite that.

technological management the purpose of promulgation is to invite public debate about the use of measures that, if approved, will redefine the practical options for regulatees.

All being well, during the course of debating the proposal, there would be information about how the proposed measures of technological management would work. Bert-Jaap Koops highlights the importance of this kind of transparency by hypothesising the case of a street food seller who is denied a licence to operate in a zone that security services require to be risk-free.[56] The seller does not understand why he is judged to be a safety risk; and, if there is to be due process, he needs to know on what basis the automated decision was made. Where one piece of data is determinative (such as, in Koops' example, a criminal conviction twenty years earlier for being in possession of drugs), it should be possible for this to be given as the reason and then the seller might challenge the accuracy of, or weight given to, this data item. In other kinds of cases, where 'advanced self-learning algorithms calculate risks based on complex combinations of factors' it might be necessary to bring in independent third-party auditors, thereby providing 'another type of checks and balances on the fairness of profiling-based decisions.'[57] Summing up, Koops says that decision transparency in such cases could be effected 'first, by a legal obligation to inform the applicant that the decision was based on profiling and allowing the applicant to request information about the logic involved in the profiling and, second, by architectural safeguards in risk assessment systems that aim at making the profiling more transparent, for example by marking in which proportion the outcome was influenced by data from each data source fed into the system and marking data in those sources that were used in consecutive steps when the profiling algorithm was run. Periodic independent audits could supplement the accountability of the decision-making process.'[58]

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56 Bert-Jaap Koops, 'On Decision Transparency, or How to Enhance Data Protection after the Computational Turn' in Mireille Hildebrandt and Katja de Vries (eds), *Privacy, Due Process and the Computational Turn* (Abingdon: Routledge, 2013) 196, at 212-213.

57 *Ibid.*, at 212.

58 *Ibid*. That said, where decisions are automated, and particularly where machine learning is involved, it might not be possible to explain how the 'black box' elements of the system work. See, e.g., Tal Zarsky, 'The Trouble with Algorithmic Decisions: An Analytic Road Map to Examine Efficiency and Fairness in Automated and Opaque Decision Making' (2016) 41 *Science, Technology and Human Values* 118 at 121:

> [A] high level of automation in algorithmic processes could inherently increase opacity. Analysis based upon mined data, premised on thousands of parameters, may be difficult to explain to humans. Therefore, achieving transparency in such cases presents substantial challenges. Equally, the firm governing through such data analysis would find it difficult to adequately explain the 'real reason' for its automated response—even after making a good faith effort to do so.

This suggests that, if technological management, in order to be compatible with the Rule of Law, has to be transparent, then some forms of automation might be held back until their black boxes can be understood and explained.

In sum, in an age of technological management, promulgation remains an important aspect of legality. However, it is not the prohibitions, permissions and requirements of the rule-book that need to be published; rather, it is proposals for the use of technological management that need to be promulgated. It is not the rules that are the outputs of the regulatory process that need to be published (although, of course, they do) so much as the inputs into that process that need to be advertised. Promulgation bites on the regulatory process ex ante not ex post.

6.2 *Laws should be prospective rather than retrospective*

Next, we can consider the Fullerian injunction against the use of retrospective rules. No one surely would gainsay Fuller's remark that a regime 'composed exclusively of retrospective rules could exist only as a grotesque conceit worthy of Lewis Carroll or Franz Kafka.'[59] Certainly, where penalties are applied for breach of rules that have retrospective effect, this represents a paradigm of unfairness; regulatees not only do not know where they stand, they are denied a fair warning that they are non-compliant and that they are liable to be penalised. Even if the rules are themselves extremely unfair or difficult to justify, it is an independent requirement that they should be applied only with prospective effect. This is a basic requirement of due process.

In a non-normative context, there might be some examples of technological management operating with retrospective effect: for example, digital records might be wiped clean and amended; and, in contractual relationships, there might be some retroactive adjustment of the parties' positions. However, in general, where technological management is introduced to make a particular act impossible, or to remove what was previously a practical option, it takes effect as of then. No doubt, as in the Fullerian world of rules, it would be good practice to give regulatees fair warning that such technological measures are to be introduced; and, if regulatees operate on the assumption that what is possible in technologically managed environments is to be treated as permissible, then it would be unfair to penalise by retrospective rule or decree those regulatees who, in good faith, have acted on that assumption. However, on the face of it, technological management does not in itself introduce new risks of unfair retrospective penalisation of conduct.

6.3 *Laws should not require the impossible*

The injunction against requiring the impossible responds not only to the irrationality of requiring persons to defy the law of gravity or to be in two places at one and the same time, but also to the unfairness of penalising persons for failing to comply with rules that require the literally impossible or that impose penalties on persons who, through no fault of their own, find themselves in circumstances where compliance is simply not possible.[60] On the face of it, because technological management operates in a mode that redefines what is possible and what is impossible within a particular regulatory space, it should not fall foul of requiring the impossible. To be sure, in some nightmarish world, regulators might introduce a

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59 Fuller (n 3) at 74.

60 For Fuller's critical remarks on strict liability criminal offences, see esp ibid. at 77-78.

rule that requires regulatees to defy the restrictions imposed by technological management and penalises those who fail to succeed; but we can discount this bizarre possibility—this really would be the stuff of dystopian fiction.

Rather, if the injunction against requiring the impossible has any continuing relevance, its thrust will be to avoid unfairly penalising regulatees in their various encounters with technological management. For example, would it be unfair to penalise an agent who attempts (but fails) to perform an act which that agent knows is impossible because it is prevented by technological management? Would it be unfair to punish a one-time and now frustrated vandal for persistently throwing stones at bus shelters equipped with shatterproof glass? Would it be unfair to penalise such a person if the defence put forward was, not that this would amount to punishing a person for failing to do a required act that was actually impossible, but that the act was innocuous and that no person should be punished for attempting but failing to do the impossible?

According to George Fletcher, legal systems 'seem to agree that impossible attempts are punishable if the behavior (sic) itself produces apprehension or generates apprehension in the mind of an ideal observer. For example, if someone shoots into the bed where her intended victim usually sleeps, the courts readily impose liability for attempted murder.'[61] Where legal systems diverge is in relation to cases of seemingly innocent or innocuous acts such as 'purchasing talcum powder (thinking that it is heroin), putting sugar in an enemy's coffee (thinking that it is cyanide), or administering a harmless substance to a pregnant woman (thinking that it is an abortifacient).'[62] Taking a liberal approach, some legal systems emphasise that such acts are harmless: no harm is done; no harm could have been done; and so there is no case for criminalising such attempts. By contrast, a less liberal approach focuses on the attitude of the agent (who intends to cause harm). On this view:

> The act of attempting must be judged by the actor's 'conception of the act.' This means that if the actor assumes that the powder he buys is heroin or that the stuff he puts in the coffee is poison, his conduct is judged according to those facts. That there is no actual danger to anyone in these actions—and no manifestation of danger to unnerve the community—becomes irrelevant.[63]

The justification for the latter approach is that by 'deciding to commit a crime and acting on the decision, the individual pits himself against the community…the person who reveals his hostility toward the rights of other becomes too dangerous to tolerate.'[64] No doubt, these are divisions that will reproduce themselves, if and when some regulatees attempt unsuccessfully

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61 Fletcher (n 24), at 177.

62 *Ibid*, at 177-178.

63 *Ibid*, at 178.

64 *Ibid*, at 179.

(but perhaps persistently) to do those acts that technological management has rendered impossible.

Suppose, though, that the case in question is rather different. Here, let us suppose that some measure of technological management is prone to malfunction from time to time, such that an agent might in some circumstances be unclear whether a particular act was or was not possible (and by implication permissible). Should it be open to such an agent to plead that, where technological management is in place, 'can implies may'? Paradoxically, perhaps, where the linkage between the preventive technological measures and the underlying normative pattern of prohibition is clear, it might be difficult for an agent to argue in good faith that they believed that can implied may; and where the linkage is less clear, unless 'can implies may' is a general default, the agent is making a (convenient) leap from the non-normative actuality to the supposed underlying normative pattern.

6.4 *Laws should be clear*

The Fullerian principle relating to clarity insists that regulatees should not be left uncertain about what the rules require. If such uncertainty exists, the law is likely to be less effective than it might be; and, where penalties are attached to non-compliance, it is unfair to punish regulatees who are unclear about what the law requires—or, as it is commonly expressed, due process demands that there should be a fair warning that a particular act will breach the law.[65]

When we switch to a context of technological management, the clarity of the regulatory signal might be somewhat less important but it is not entirely redundant. Regulators still need to communicate with their regulatees; and, crucially, they need to signal that only certain options are practically available. To this extent, clarity of transmission is still something that matters. Of course, if the regulatory environment, even a regulatory environment in which the signals are not clear, is designed in such a way that regulatees have no option other than to do x, they will eventually do x. Even so, x should be done with less friction and confusion where the regulatory signal is clearly and decisively transmitted.

There is, however, another dimension to compliance in a space that is technologically managed. We can anticipate some contexts in which, although 'rule compliance' is technologically guaranteed, agents will still seek to be guided by rules that are familiar or by a rule-book. For example, chess-players will probably learn the rules of the game and be guided by the rules even though the boards and pieces that they use are designed to ensure that the rules cannot be broken. That said, there might be a market for 'puzzle' versions of games such as chess where the object of the exercise is to explore which moves the technological management allows and then to deduce what the rules of the game are. Where regulatees continue to seek guidance from the rules, the standard Fullerian ideals apply: the rules should be clear and comprehensible.

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65 For stock examples, see the reasoning of the Supreme Court in *McBoyle v United States* 283 US 25 (1931) and *Papachristou v City of Jacksonville* 405 US 156 (1972); and see, too, *United States v Cardiff* (n 68). See, too, the discussion of the Rule of Law in A.P. Simester and Andreas von Hirsch, *Crimes, Harms, and Wrongs* (Oxford: Hart, 2014), Ch 11.

Predictably, though, rules, including the rules of games, are not always clear, comprehensible, or easy to apply. In such cases, technological management might be introduced to ensure that in these more problematic areas the rules are not broken. For example, on a stretch of motorway where there are frequently varying speed limits, motorists might be warned that they are entering a zone where the maximum speed of the vehicle will be technologically controlled. Provided that drivers know that this is the case, they will understand what is happening when, despite pressure on the accelerator pedal, the car simply will not increase speed.

Then, there will be contexts in which agents no longer attempt to be guided by rules; they simply learn by experience that, in technologically managed environments, some things can be done and others cannot; or, as in driverless vehicles, they let the technology do the work. Again, provided that agents have a sense of where and what is technologically managed, they can operate successfully in these environments.

6.5 *Laws should be relatively constant*

While laws need to be revised from time to time, there is a problem if they are changed so frequently that regulatees are uncertain of their legal position. Just as a lack of clarity in the law breaches the fair warning principle, the same applies to a lack of constancy. Similarly, we might think that constancy has some value even in a non-normative regulatory environment. Indeed, as we have already noted, we might imagine that if some application of technological management sometimes prevents an act but at other times permits it—whether this arises from a technological malfunction or by a deliberate change made to the regulatory coding—this can leave regulatees uncertain of their position. This invites some confusion, which is undesirable; but perhaps the real sting in this requirement is if penalties or other forms of detriment are suffered as a result of too many technological modifications. In such circumstances, the application of penalties, we can surely assume, would be a departure from the ideals of legality.[66]

6.6 *Laws should not be contradictory*

Legality, Fuller argues, aspires to the avoidance of contradiction—that is to say, contradiction between rules and/or precedents, contradiction within legislation, and so on. To recall one of Fuller's examples, we might detect a contradiction in s 704 of the Federal Food, Drug, and Cosmetic Act when it seemingly prohibited an inspector from entering a factory without the owner's permission but, at the same time, prohibited the owner from refusing permission for the purpose of entering or inspecting the factory as authorised by s 704.[67] No doubt, there are ways of resolving whatever contradiction is thought to arise from coupling (i) the inspector needing the owner's permission to enter (implying the owner's having the right to withhold permission) with (ii) the owner being required to grant permission—although, as Fuller

66 As Chris Reed (n 52) summarises it (at 927): 'Complexity makes laws hard to understand, contradictory rules make compliance impossible and frequent change compounds these difficulties.'

67 Fuller (n 3), 67-68.

points out, not necessarily in ways that make any sense relative to the legislative purposes. However, in *United States v Cardiff*,[68] the Supreme Court treated this contradiction as fatal, holding that the clash between these provisions meant that, for the purposes of a conviction under the criminal law, this was simply not good enough; the defendants were entitled to be given a fair warning that their conduct was subject to criminal penalty.

Elsewhere, I have considered the circumstances in which rules or rulings will offend the principle of non-contradiction—in particular, whether it is contradictory for one rule to permit the doing of x in conjunction with another rule or ruling that declines to encourage or incentivise the doing of x.[69] Clearly, the paradigmatic case of contradiction is where one rule prohibits the doing of x while another permits or requires the doing of x. However, what does non-contradiction imply in a context of technological management? Perhaps the obvious implication is that, in a particular situation, the relevant technologies should be consistent in allowing or disallowing a certain 'act'. Where the technologies are simply talking to one another, some inconsistency might be inconvenient. However, if humans are misled by the inconsistency, and if there are penalties for doing some act that should have been prevented, but where the technology has failed, then it would seem to be unfair to apply the penalty—or, at any rate, it would be unfair if the agent acted in the good faith belief that, because the signal was set to 'possible', this implied that the act was permitted.

6.7 *The administration of the law should be congruent with its published rules*

As is well-known, Fuller attaches a very high importance to the principle of congruence, to officials administering the rules in accordance with the declared rules, rather than operating with a secret rule book. However, because technological management promises to close the normative gap (the possible gap between the standard as declared and as administered), congruence takes on a different significance.

Where rules are administered by automated systems, congruence demands that the technology should faithfully follow the rules as intended. This presents a considerable challenge to the coding of rules.[70] However, this is still recognisably an issue of legality within a Fullerian universe of rules. The question is whether congruence, or at any rate the spirit of congruence, has an application to a context of technological management.

The spirit of congruence is that regulators and their enforcement agents should operate in a way that accords with the expectations of regulatees as reasonably formed on the basis of the regulatory signals. In a context of technological management, as we have remarked already, regulatees might reasonably expect that where an act is possible then regulators treat it as

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68 344 US 174 (1952).

69 See Roger Brownsword, 'Regulatory Coherence—A European Challenge' in Kai Purnhagen and Peter Rott (eds), *Varieties of European Economic Law and Regulation: Essays in Honour of Hans Micklitz* (Springer, 2014) 235.

70 See Danielle Keats Citron, 'Technological Due Process' (2008) 85 W*ashington University Law Review* 1249.

optional and no negative regulatory reaction should ensue where the act is done—at least, this is so unless regulatees clearly know that there has been a malfunction or something of that kind (analogous to regulatees looting shops during a police strike or bringing in excess tobacco and alcohol during a strike by the customs and excise officials). So, congruence, along with clarity, constancy, and the like, demands that regulators and their agents do not penalise regulatees who, in good faith, have misunderstood the regulatory position. Similarly, regulatees will reasonably expect that where they follow the technologically managed procedure (such as paying the correct fee for the use of a toll road) they will be able to proceed as planned. If the technology fails to allow the reasonably expected next step, this might diminish the respect that regulatees have for the system.[71]

It is also within the spirit of congruence that the articulation of technological management should be within the limits that have been published for its particular use as well as coherent with background limiting principles. On any understanding of the Rule of Law, powers should be operationalised in a way that is intra vires; and, as we have seen already in Part 5 of this paper, the rules and principles that set the limits for the use of technological management are a key reference point for the purpose of determining whether there has been an abuse of power.

6.8 *Laws should be general*

Fuller, recalling the historic abuse of prerogative power, also identifies ad hominem 'rules' as contrary to the very idea of legality. Of course, courts hand down rulings that apply only to the particular parties, but legislative acts should be of general application. By contrast, in an age of technological management, we can expect there to be ubiquitous use of algorithms that classify, sort, and profile persons.

Imagine that, in the future, technological management fundamentally alters the trajectory of the criminal justice system, turning it into a scheme for ex ante prediction, prevention, and (in a new sense) 'punishment' rather than ex post reaction.[72] Central to such a strategy might be the use of technologies to identify 'dangerous' classes, 'dangerous' individuals, as well as 'suspicious' acts. Notoriously, in the past, attempts to identify and isolate 'dangerous' persons have been plagued by high rates of false positives.[73] However, in an age of big data

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71 Compare David J. Smith, 'Changing Situations and Changing People' in Andreas von Hirsch, David Garland, and Alison Wakefield (eds), *Ethical and Social Perspectives on Situational Crime Prevention* (Oxford: Hart, 2000) 147, at 170: 'If [the automatic motorway exit gates] do not open on payment of the correct fee, [and if] attendants will not countenance any discussion of the matter…no motorist will have any compunction about driving through if, perchance, the machine should open the gate after payment of [less than the required fee].'

72 See Mireille Hildebrandt, 'Proactive Forensic Profiling: Proactive Criminalization?' in R.A. Duff, Lindsay Farmer, S.E. Marshall, Massimo Renzo, and Victor Tadros (eds) *The Boundaries of the Criminal Law* (Oxford: Oxford University Press, 2010) 113.

73 See A.E. Bottoms and Roger Brownsword, 'Dangerousness and Rights' in J. Hinton (ed), *Dangerousness: Problems of Assessment and Prediction* (London: George Allen and Unwin, 1983) 9, and 'The Dangerousness Debate after the Floud Report' (1982) 22 *British Journal of Criminology* 229.

and machine learning, we might reasonably expect a continuing improvement in the accuracy of prediction. How might such a development relate to the Fullerian aspiration of generality?

Briefly, where the classes of 'dangerous' and 'non dangerous' persons are quite broad, the application of technological management will be relatively general; and this would seem to satisfy the Fullerian standard. However, to the extent that there are significant numbers of false positives in the group classified as dangerous, this is an obvious cause for concern (even if, with sophisticated machine learning, the predictions improve). Conversely, where profiling becomes more fine-grained and the management is more personalised, the targeting of particular individuals will be more pronounced. Here, instead of focusing on dangerous acts or dangerous classes, precision profiling is likely to identify and isolate dangerous individuals. While accurate identification eases concerns about injustice, the strategy raises Fullerian concerns by becoming more ad hominem.

There is also the thought that the real question raised by such a strategy is not whether the profiling is of individuals-as-members-of-certain classes or of individuals-as-individuals, but whether individuals are made aware of their profiles and predictions and given the opportunity to use them, so to speak, as mirrors that enable them 'to change their ways and/or to contest a profile's application.'[74]

This, however, is to take us away from the question of generality. So far as generality is concerned, it seems quite possible that this will raise major question for communities using profiling techniques while committed to Fullerian principles. For, if this form of technological management offends a community's ideas of fairness or legality but is more accurate than more general profiling and targeting strategies, some hard choices will need to be made.

6.9 *Taking stock*

In a context of technological management, I suggest that the best reading of Fuller is that the key principles of legality become openness, or transparency, in authorising the use of measures of technological management for particular regulatory purposes, supported by ideals of fairness and due process.[75] So far as public regulators are concerned, there needs to be an authorising rule framework setting out the process for adopting measures of technological management, with particular proposed uses being openly debated (for example,

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74 Hildebrandt (n 72), at 137.

75 Compare Ian Kerr, 'Prediction, Pre-emption, Presumption' in Hildebrandt and de Vries (n 56) 91 at 109:

> At its core—whether in the public or private sector, online or off—the due process concept requires that individuals have an ability to observe, understand, participate in and respond to important decisions or actions that implicate them.

in the legislative assembly or by administrative notice and comment procedure). As Danielle Keats Citron, has recommended[76]:

> [A]gencies should explore ways to allow the public to participate in the building of automated decision systems….
>
> In the same vein, agencies could establish information technology review boards that would provide opportunities for stakeholders and the public at large to comment on a system's design and testing. Although finding the ideal makeup and duties of such boards would require some experimentation, they would secure opportunities for interested groups to comment on the construction of automated systems that would have an enormous impact on their communities once operational.

Moreover, private use of technological management should be permitted only within publicly agreed limits (perhaps, for example, for the purpose of assessing commercial risk) and, if new uses are proposed, they should be approved by open special procedures (possibly akin to applications for planning permission). In all cases, ideals of fairness should support the process by insisting that tricks or traps should be avoided.

Although technological management presents in a quite different way to rule-based laws, there is, I believe, a strong thread of connection to Fullerian ideals. Fuller, it will be recalled, traced his differences with his critics to the following two key assumptions made by the legal positivists:

> The *first* of these is a belief that the existence or non-existence of law is, from a moral point of view, a matter of indifference. The *second* is an assumption…that law should be viewed not as the product of an interplay of purposive orientations between the citizen and his government but as a one-way projection of authority, originating with government and imposing itself upon the citizen.[77]

With regard to the first of these assumptions, I have already indicated that I view law as central to assisting communities with moral aspirations to resolve their differences; and, from a legal idealist perspective, it clearly matters that we have law in the sense of respect for the ideals of legality and the Rule of Law—this being the fundamental point for both Fuller (in the context of rules) and for this paper (in the context of technological management). As we will see in the next part of the paper, the question of whether it matters that we have not just law, but laws *in the form of rules*, raises some very interesting issues. Even if technological management is more effective than rules of law, there might still be reasons for maintaining some practices of standard-setting, norm negotiation, and the like.

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[76] Danielle Keats Citron (n 70), at 1312; and, see, Mireille Hildebrandt, 'Law as Information in the Era of Data-Driven Agency' (2016) 79 MLR 1.

[77] Fuller (n 3), at 204.

Turning to the second of the key assumptions, Fuller elaborates the point by drawing a crucial contrast between a legal form of order and simple managerial direction. He sketches the distinction between the two forms of order in the following terms:

> The directives issued in a managerial context are applied by the subordinate in order to serve a purpose set by his superior. The law-abiding citizen, on the other hand, does not apply legal rules to serve specific ends set by the lawgiver, but rather follows them in the conduct of his own affairs, the interests he is presumed to serve in following legal rules being those of society generally. The directives of a managerial system regulate primarily the relations between the subordinate and his superior and only collaterally the relations of the subordinate with third persons. The rules of the legal system, on the other hand, normally serve the primary purpose of setting the citizen's relations with other citizens and only in a collateral manner his relations with the seat of authority from which the rules proceed. (Though we sometimes think of the criminal law as defining the citizen's duties towards his government, its primary function is to provide a sound and stable framework for the interactions of citizens with one another).[78]

As Fuller concedes, these remarks need 'much expansion and qualification';[79] and he tries to give more substance to them by characterising the relationship, in a legal order, between government and citizens in terms of 'reciprocity' and 'intendment'.[80] Perhaps, Fuller's most evocative observation is that 'the functioning of a legal system depends upon a cooperative effort—an effective and responsible interaction—between lawgiver and subject.'[81]

From this clutch of ideas, it is the association of legal ordering with an open and two-way reciprocal process that is most fruitful. For, in the larger context of the regulatory environment, it implies that the legal approach—an approach to be valued—is one that embeds participation, transparency, due process and the like in the construction and reconstruction of this environment. Hence, if we take our lead from Fuller, we will reason that, whether we are dealing with a regulatory enterprise that subjects human conduct to the governance of rules (in the way that both Fuller and his critics agreed was the pre-theoretical nature of law) or that relies on technological control to design-in or design-out conduct, we should hold on to the idea that what we value is a reciprocal enterprise, not just a case of management, let alone technological management, by some regulatory elite.

7. Excluding the use of technological management

Although the spirit of the Fullerian ideals of legality can be brought to bear on the adoption of technological management, we might still feel that, if not quite a fresh start, some

78 Fuller (n 3), at 207-208.

79 Fuller (n 3), at 208.

80 Fuller (n 3), at 209 et seq.

81 Fuller (n 3), at 219.

supplementation needs to be made. To be sure, the Fullerian ideals continue to be applicable to the normative dimensions of the regulatory environment; but, once technological management is employed, these ideals as specified might be thought no longer to apply in an entirely adequate way. As we have intimated on a number of occasions, even if it is a necessary condition for the legitimacy of a particular use of technological management that the underlying normative rule satisfies or would satisfy the Rule of Law, is this sufficient? Are there not additional conditions and considerations for the use of technological management which, after all, is unlike a rule in that it compels or 'obliges' regulatees to act in certain ways? Accordingly, our fourth question is this: if the use of technological management is not to be arbitrary, if its use is to be 'respected' by citizens, what additional terms and conditions should be set for its use? Let me suggest the following further conditions and considerations (each expressed in the form of a question) that merit serious consideration and that might be reasons for regulators to hesitate before employing technological management.

7.1 *Will the use of technological management compromise or diminish the essential conditions for moral community?*

For any community that has moral aspirations, it is imperative that technological management does not compromise the essential conditions for moral community. In other words, the Rule of Law should require that the use of technological management should be consistent with the maintenance of the essential conditions for moral community. Stated minimally, the moral aspiration is that all members of the community, whether regulators or regulatees, should try to do the right thing (relative to the legitimate interests of both themselves and others). While it is for each community to determine precisely how these essential conditions are articulated, interpreted, and operationalised, let me suggest that three key concerns relate to (i) maintaining the context for the possibility of authentic moral action, (ii) preserving the practical option of acting in accordance with one's conscience, and (iii) preserving space for moral debate and development.

With regard to *authenticity*, the point is that, even where regulatees accept the moral judgments made by regulators, there might be a concern that the use of technological management interferes with the cultivation of moral virtue, with an understanding of what it is to respect others and with authentic moral action. As I have emphasised on many other occasions, by compelling or precluding certain actions, technological management interferes with agents freely doing the right thing for the right reason.[82]

Where regulatees do *not* accept the moral judgments made by regulators, the use of technological management might be in tension with their *conscience* in more than one way. In some scenarios, the use of technological management might compel an agent to do x, where the agent judges that doing x is either morally prohibited or that it is morally optional

[82] Compare Ian Kerr, 'Digital Locks and the Automation of Virtue' in Michael Geist (ed), *From 'Radical Extremism' to 'Balanced Copyright': Canadian Copyright and the Digital Agenda* (Toronto: Irwin Law, 2010) 247.

(and the agent who is so compelled would not opt to do x); in other scenarios, the use of technological management might prevent an agent from doing y, where the agent judges that doing y is either morally required or that it is morally optional (and the agent who is so prevented would opt to do y). We can argue about whether these examples of compulsion and prevention are all equally moral problematic but, in the paradigmatic case of technological management being used to compel an agent to do an act that he or she judges to be morally prohibited, this is surely an extremely serious compromising of moral community. At least, in a normative order, there is a 'gap' between the rule and the agent's act of compliance or non-compliance; agents might have rule-based obligations but they are not obliged or compelled to follow the rule; typically, there is an opportunity for an agent to decline to act in a way that offends their conscience.

Where the community is concerned to avoid compelling members to act against their *conscience,* then this suggests that regulators should eschew the use of technological management where there are significant moral disagreements about the regulatory purpose or provision. Moreover, quite apart from the potential tension between individual conscience and technologically managed compulsion or prevention, there is, as Evgeny Morozow has pointed out, a possible interference with the opportunities for civil disobedience and conscientious objection that we value in liberal democracies.[83]

Then there is the concern about preserving sufficient *space for moral debate and development*, for the realisation of a community with an active and engaged moral membership, with members taking personal moral responsibility. How should we judge whether a particular employment of technological management will make any significant difference to the context that is presupposed by moral community? There is no reason to think that, in previous centuries, the fitting of locks on doors, or the installing of safes, and the like, has fatally compromised the conditions for moral community. Even allowing for the greater sophistication, variety, and density of technological management in the present century, will this make a material difference? Surely, it might be suggested, there still will be sufficient occasions left over for agents freely to do the right thing and to do it for the right reason as well as to oppose regulation that offends their conscience. In response to these questions, it will be for each community with moral aspirations to assess how precautionary it needs to be in its use of such a regulatory strategy.[84]

As an example of precautionary thinking, regulators might draw back from using technological management where they sense that it is either doing too much work for regulatees or disrupting informal group or sectoral standard-setting and norm negotiation—for example, the norms of 'neighbourliness' and of 'cooperation and compromise' that characterise the self-regulating groups that we meet, respectively, in Robert Ellickson's

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83 Evgeny Morozov, *To Save Everything, Click Here* (London: Allen Lane, 2013).

84 Compare, Karen Yeung, ''Can We Employ Design-Based Regulation While Avoiding Brave New World?' (2011) 3 *Law, Innovation and Tec*hnology 1.

classic study of the ranchers and farmers of Shasta County, California,[85] and in Stewart Macaulay's seminal study of the transactional practices of Wisconsin business people.[86] Accordingly, before the use of technological management is authorised, it might be thought important to check on how this is likely to impact on the opportunities for groups to self-regulate their interactions and transactions; and, to the extent that the law of torts and of contract reflects group standards rather than setting or imposing them, regulators might hesitate before using technological management lest it crowds out self-regulatory practices that make an important contribution to the moral life of the community.[87]

7.2 *Should the core parts of the criminal code be ring-fenced against technological management?*

Why should a community with moral aspirations wish to ring-fence some rule-based parts of its law against possibly more effective technological management? One thought is that the use of technological management might provoke some injustice in the treatment of offenders; but, if the technology prevents the commission of crime, there should be no offenders to be treated. A more convincing thought is that the technology might be broad sweep preventing not only the commission of offences but also innocent acts by innocent persons. Let me focus, however, on another angle which is that these core areas of the criminal law are places where some space needs to be given for the assumption of moral responsibility and moral development.

If we turn the clock back, we find that from the middle part of the nineteenth century, there is the beginning of a bifurcation between, on the one hand, traditional criminal law, tort law, and contract law, and, on the other, a body of risk-managing regulatory law where liability can be absolute, strict, and impersonal. For example, we see a significant divergence between, so to speak, 'true' or 'real' crime (intentionally inflicting serious harm on another agent) and merely 'regulatory' crimes (where unsafe goods, practices, or conditions might lead to harm being caused);[88] and in the case of torts, we see, as Geneviève Viney and Anne

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85 Robert C. Ellickson, *Order Without Law* (Cambridge, Mass.: Harvard University Press, 1991).

86 Stewart Macaulay, 'Non Contractual Relations in Business: A Preliminary Study' (1963) 28 *American Sociological Review* 55.

87 In the case of contracts, compare Roger Brownsword, 'Post-Technique: *The New Social Contract* Today' in David Campbell, Linda Mulcahy and Sally Wheeler (eds), *Changing Concepts of Contract* (Basingstoke: Palgrave Macmillan, 2013) 14. Quaere: is there a thread of connection here with Hayek's idea that the Rule of Law is associated with spontaneous ordering? See F.A. Hayek, *Law, Legislation and Liberty Volume 1* (Chicago: University of Chicago Press, 1983) 94 et seq.

88 Seminally, in relation to the emergence of regulatory criminal offences, see F.B. Sayre, 'Public Welfare Offences' (1933) 33 *Columbia Law Review* 55; and, see, too, Peter Ramsay, 'The Responsible Subject as Citizen: Criminal Law, Democracy, and the Welfare State' (2006) 69 MLR 29. However, the strictness of regulatory offences may be mitigated in practice by enforcement policies that restrict prosecutions to those cases where the offender is actually morally culpable. Classically, see W. Carson, 'White Collar Crime and the Enforcement of Factory Legislation' (1970) 10 *British Journal of Criminology* 383. For the movement from traditional (moral) tort to regulatory torts, see the various

Guégan-Lécuyer put it, a movement away from liability that is fault-based and that is 'conceived of as personal, individual and subjective.'[89] In contracts, the bifurcation is more complex. Initially, classical ideas of 'subjective' agreement give way to notions of 'objective' agreement;[90] but the fundamental bifurcation takes place only in the later part of the twentieth century when the law responds to the particular needs of the consumer marketplace—a marketplace that, in the present century, will increasingly be characterised by sophisticated technologies that structure and personalise the transaction in a way that tends to prioritise the commercial interests of suppliers.[91]

Now, it is tempting to think that, to the extent that technological management can eliminate unsafe goods, practices, or conditions, then all well and good—indeed, this is a distinct improvement on relatively ineffective rules that try to promote human health and safety, 'green' environmental practices, and the like. However, in a community that has moral aspirations, where the core provisions of the criminal code are viewed as expressing serious moral and public wrongs affecting all members of the community, this is an important space for both communication and condemnation. This gives rise to two cautionary thoughts: the first is that we should be slow to copy across the features of regulatory criminal law to the core criminal offences; and, the second is that we should be slow to abandon moral censure where we are dealing with serious public wrongs.

Speaking to the first caveat, Francis Sayre famously argued that it would be a grave mistake simply to copy across the features of regulatory law to the core criminal offences. As Sayre put it:

> The group of offenses punishable without proof of any criminal intent must be sharply limited. The sense of justice of the community will not tolerate the infliction of punishment which is substantial upon those innocent of intentional or negligent wrongdoing; and law in the last analysis must reflect the general community sense of justice.[92]

However, this is not an argument against the use of technological management in place of either the regulatory or the core crimes; rather, Sayre is cautioning against the proliferation of absolute and strict liability offences. The purpose of technological management is not to ease the burden on prosecutors or claimants; it is quite different, seeking to preclude or exclude

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contributions to Miquel Martin-Casals (ed), *The Development of Liability in Relation to Technological Change* (Cambridge: Cambridge University Press, 2010).

89 Geneviève Viney and Anne Guégan-Lécuyer, 'The Development of Traffic Liability in France' in Martin-Casals (n 88) 50, at 50.

90 See the insightful commentary in Stephen Waddams, *Principle and Policy in Contract Law—Competing or Complementary Concepts?* (Cambridge: Cambridge University Press, 2011).

91 See, Eliza Mik, 'The Erosion of Autonomy in Online Consumer Transactions' (2016) 8 *Law, Innovation and Technology* 1.

92 Sayre (n 88) at 70.

the possibility of committing what would otherwise be crimes and torts. While it might seem unlikely that 'the general community sense of justice' would be outraged by the use of technological management in place of regulatory criminal offences (or torts), it is unclear whether the same would apply if it were proposed to rely on measures of technological management rather than penal rules in the core parts of the criminal code.

With regard to the second caveat, Antony Duff makes the important point that regulators who are contemplating using a 'non-criminal' mode of regulation rather than the criminal law should hesitate before changing the regulatory signal from one that is moral to one that is prudential.[93] Thus,

> We must ask about the terms in which the state should address its citizens when it seeks to regulate their conduct, and whether the tones of criminal law, speaking of wrongs that are to be condemned, are more appropriate than those of a regulatory regime that speaks only of rules and penalties for their breach.[94]

According to Duff, where the conduct in question is a serious public wrong, it would be a 'subversion' of the criminal law if offenders were not to be held to account and condemned. The unanswered question is whether using technological management to preclude or exclude conduct that would otherwise be condemned as a serious moral wrong would also amount to a subversion of the criminal law. Here, the complexion of the regulatory signal changes, not from moral to prudential, but from moral to non-normative possibility and impossibility.[95] For a moral community, even if serious breaches of moral rights and duties could be prevented by the use of technological management, it might be thought to be important to maintain this sphere of conduct as a rule-guided zone—because this is where there is a public accounting for our conduct, this is one of the ways in which moral agents come to appreciate the nature of their most important rights and responsibilities, and this is how in inter-personal dealings they develop their sense of what it is to do the right thing.[96]

7.3 *Will agents become over-reliant on technological management?*

Following on from the last point, regulators should perhaps be mindful that agents might come to assume that they no longer need be concerned about doing the right thing because the technology will manage matters for them. For example, some years ago, David Smith

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93 R.A. Duff, 'Perversions and Subversions of Criminal Law' in Duff et al (n 72) 88. For questions that might arise relative to the 'fair trial' provisions of the European Convention on Human Rights where a state decides to transfer less serious offences from the criminal courts to administrative procedures (as with minor road traffic infringements), see e.g., *Öztürk v Germany* (1984) 6 EHRR 409.

94 (n 93), at 104.

95 See, Roger Brownsword, 'Lost in Translation: Legality, Regulatory Margins, and Technological Management' (2011) 26 *Berkeley Technology Law Journal* 132.

96 Compare Cass R. Sunstein, *Choosing Not To Choose* (Oxford: Oxford University Press, 2015) at 119-120, recognising that there might be an argument to be made for active choosing when 'learning, authenticity, responsibility, and the development of values and preferences are important.'

raised the question of whether, if the architecture and technology of public transport systems makes it impossible to ride the trains without having purchased a ticket—or, as in the then planned Météor line in Paris, to 'eliminate opportunities for suicide attempts…, the intentional pushing of riders [off platforms], and the deposit of narcotics on the tracks for later sale'[97]—this might weaken the sense of individual responsibility for paying the fare (or otherwise doing the right thing).[98] Might publicly-transported regulatees become over-reliant on moral management by the technology? Or, to generalise this, we might wonder whether, if payment for provision of goods and services is automated so that it is not possible to avoid payment—for example, so that it is not possible to drive away from the petrol station without paying for the fuel, or to leave the supermarket without having paid for the goods—this might have some impact on the sense of obligation to honour one's debts. If technological management threatens to take over in this way, regulators might have reason to take steps to restore regulatees' sense of moral obligation and responsibility.

7.4 *Will technological management map accurately onto the moral interests recognised?*

Where the aspiration is not simply to be a moral community (a community committed to the primacy of moral reason) but a particular kind of moral community, then it will be a condition of the Rule of Law that the use of technological management should be consistent with its particular constitutive features. For example, where a community is guided by a deontological morality that operates with a set of basic moral rights and moral duties (such as respecting the person, property, and personality of others, telling the truth, keeping one's promises, and so on), it will be important to consider whether the use of technological management is compatible with those particular rights and duties. Hence, in a Gewirthian community of rights, the use of technological management will be limited to measures and purposes that are compatible with respect for the generic rights of agents. Because Gewirthian moral theory recognises both negative and positive rights, its application to technological management might well be different from some other rights-led theories; but this is not a question that I can pursue further here.[99]

Consider in this light a proposal to use technological management to protect the privacy interests of agents. Although critics of rule-based protection of privacy might argue that the

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97 See Marina L. Myhre and Fabien Rosso, 'Designing for Security in Météor: A Projected New Métro Line in Paris' in R.V. Clarke (ed), *Crime Prevention Studies 6* (Monsey, NY: Criminal Justice Press, 1996) 199, 202.

98 See, David J. Smith (n 71), at 170: 'If people are denied any autonomy, then they perceive that the moral responsibility lies entirely with the system, and they no longer retain any obligations themselves.'

99 Recall my remarks in n 2. It is one thing to apply Gewirthian principles to particular *rules* (see, e.g., Deryck Beyleveld and Roger Brownsword, 'Impossibility, Irrationality, and Strict Product Liability' in Geraint Howells and Jerry Phillips (eds), *Product Liability* (Chichester: Barry Rose Publishers, 1991) 75, and 'Research Participants and the Right to be Informed', in Pamela R. Ferguson and Graeme T. Laurie (eds), *Inspiring a Medico-Legal Revolution* (Essays in Honour of Sheila McLean) (Farnham: Ashgate, 2015) 173; but the outstanding question is whether a proposed use of technological management, instead of rules, raises additional questions for Gewirthians and, if so, what those questions are.

requirement of consent is less of a protection for the party whose privacy is at issue and more of a licence for prospective infringers, technological management will not map onto the community's underlying understanding of the privacy right if it eliminates the possibility of consent. Particularly where the community is committed to a will theory of rights (as would be the case in a Gewirthian community of rights), it is integral to that view that the rights holder may authorise acts that would otherwise infringe the right; and eliminating this dynamic in the relationships between rights holders and others would be a defective translation of the community's moral understanding.

7.5 *Where does technological management end and nudging begin?*

I have emphasised that this paper focuses on technological management: it is not about the regulatory use of technological instruments that fall short of forcing or compelling or excluding regulatees' actions; it is not about defaults, or advisory technologies, or tilts, or nudges. It is about what is possible and what is impossible. To be sure, we might find that technological management is rarely used and that concerns about legality and the Rule of Law actually home in on less extreme forms of technological intervention. Nevertheless, this paper is about technological management and the conditions that might be set for its use by the Rule of Law and the ideal of legality.

All this said, in practice, the distinction between technological management and nudges that are strong and sticky is a fine one; while, on paper, nudges reserve to agents the possibility of switching a default or opting out, in reality, the choice might be illusory. For most agents, the line between what is impossible and what is not realistically practicable might be irrelevant; either way, there is no real choice. Accordingly, we might suggest a rather different kind of regulatory hesitation, not so much a hesitation before using measures of technological management, but a hesitation when thinking about using measures the practical impact of which is likely to be little different to technological management.

Suppose that, in a particular moral community, it is taken as axiomatic that competent agents should be left to make their own judgments about what is in their self-interest, at any rate relative to the kind of lifestyle they wish to lead, the kind of projects and plans that they choose to pursue. In such a community, any proposal to use either rules or technological management for the 'purely paternalistic'[100] protection of such agents should be rejected as incompatible with the community's commitments.[101] Suppose, though, the proposal is to set a particular default with a tilt that will 'nudge' citizens to act in ways that regulators judge to

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100 No doubt, there will be arguments about whether a policy is 'purely' paternalistic: see, e.g., Karen Yeung, 'The Forms and Limits of Choice Architecture as a Tool of Government' (2016) *Law and Policy* (forthcoming). For example, health and safety measures might be justified on more than one ground—namely, that (i) they protect A against harming himself, (ii) they protect A against harming B, (iii) they reasonably minimise the burden on publicly funded health and care services, or (iv) they are agreed elements in acceptable risk management packages.

101 Compare Roger Brownsword, 'Criminal Law, Regulatory Frameworks and Public Health' in A.M. Viens, John Coggon, and Anthony S. Kessel (eds) *Criminal Law, Philosophy and Public Health Practice* (Cambridge: Cambridge University Press, 2013) 19.

be in their best interest (for example, by improving the general health and well-being of citizens). Should such a proposal be authorised? Because agents retain the option of 'opting out' and switching the default, it might well be agreed that the proposal is compatible with the community's liberal commitments. However, if the default is particularly sticky, regulators might draw back on the ground that this is tantamount to technological management. Famously, Mill railed against coerced paternalism,[102] and liberals today should object even more strongly to fully compelled and all-but-compelled paternalism. At least with coercive rules there is the practical option of non-compliance; with technological management there is no such option. For liberals, the wrong that Mill identified is compounded and intensified where technological management—or a nudge that is impossible in practice to avoid—is used for unjustified purely paternalistic reasons.[103]

Putting this point more generally, where regulators have reasons to hesitate before employing a measure of technological management (reasons that distinctively relate to their proposed use of such a measure), they should hesitate to set aside those reasons simply because the measure that they are proposing to use is not strictly speaking one of technological management. If regulators are uncertain about whether their proposed measure might actually function in the same way as a measure of technological management they should exercise precaution. In other words, they should proceed with their proposal in just the way that they would proceed were it a measure of technological management.

7.6 *Is the proposed measure of technological management being applied to protect the essential infrastructure for human agency?*

In some previous papers,[104] I have suggested that we might entrust the preservation and improvement of the essential infrastructural conditions for human agency to regulatory stewards who, for that purpose, might be authorised to use technological management. How might this square with the requirements of the Rule of Law? Certainly, there is no suggestion in my remarks that we should confer a blank technocratic cheque on regulators, treating them as mandated to act in whatever way they judge to be in the prudential interests of the community. Human agents have compelling reasons, both prudential and moral, for protecting the existence conditions for human life and the generic conditions for agency; but the Rule of Law would underline that the jurisdiction of the regulatory stewards (and, concomitantly, whatever use they make of technological management) is strictly limited to maintaining the essential infrastructural conditions. Moreover, anticipating ongoing debates about where precisely the boundary lies between these conditions and the activities of agents who are supported by this infrastructure—for example, it might be argued that some of the

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102 John Stuart Mill, 'On Liberty', in J.S. Mill, *Utilitarianism* (edited by Mary Warnock) (Glasgow: Collins/Fontana, 1962) (first published 1859).

103 But, nb, my cautionary remarks in n 100.

104 See, in particular, Roger Brownsword, 'Crimes Against Humanity, Simple Crime, and Human Dignity" in Britta van Beers, Luigi Corrias, and Wouter Werner (eds), *Humanity across International Law and Biolaw* (Cambridge: Cambridge University Press, 2014) 87; and 'In the Year 2061: From Law to Technological Management' (2015) 7 *Law, Innovation and Technology* 1.

core criminal offences are part of this infrastructure—the community might insist that the regulatory stewards deploy technological management only when they are comfortably intra vires.

It remains only to say that, unlike the Fullerian principles of legality, which focus on formal and procedural desiderata, these conditions and considerations for the lawful use of technological management bring into play a thicker morally substantive set of requirements. To claim that the Fullerian principles were only about *effective* regulation was never convincing; once they are set in the context of legal ordering, the principles are clearly about fairness. To claim that the Rule of Law conditions for the use of technological management are simply about effectiveness is manifestly absurd. Technological management appeals because it promises to be more effective than rules; but its brute instrumentalism demands that its use is conditioned by principles that give it legitimacy—otherwise, there is no reason why regulatees should at least acquiesce in its use.

8. Conclusion

According to Mireille Hildebrandt, the 'challenge facing modern law is to reinvent itself in an environment of pre-emptive computing without giving up on the core achievements of the Rule of Law'.[105] If we do not rise to this challenge, Hildebrandt leaves her readers in no doubt about the seriousness of the consequences:

> If we do not learn how to uphold and extend the legality that protects individual persons against arbitrary or unfair state interventions, the law will lose its hold on our imagination. It may fold back into a tool to train, discipline or influence people whose behaviours are measured and calculated to be nudged into compliance, or, the law will be replaced by techno-regulation, whether or not that is labelled as law.[106]

In other words, it is the ideal of legality together with the Rule of Law that stands between us and a disempowering techno-managed future. The question is, though, how we should articulate and apply these protective ideals. That, as I have said, has been the central question for this paper.

The compact that underlies the Rule of Law is the fulcrum of normative legal orders. It constrains against arbitrary governance and, where governance satisfies the relevant conditions, it demands responsible citizenship (paradigmatically in calling for respect for the law). With the introduction of technological management, the compact needs to be updated and its emphasis modified but its spirit persists and its importance is greater than ever. In a context of technological management, those laws that authorise the use of technological

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105 Mireille Hildebrandt, *Smart Technologies and the End(s) of Law* (Cheltenham: Edward Elgar, 2015) at 17.

106 Hildebrandt (n 105) at xiii; and at 226, Hildebrandt concludes by emphasising that it is for *lawyers* to involve themselves with such matters as 'legal protection by design'. See, too, Mireille Hildebrandt and Bert-Jaap Koops, 'The Challenges of Ambient Law and Legal Protection in the Profiling Era' (2010) 73 MLR 428; and Hildebrandt (n 76).

management must be promulgated and their administration needs to be congruent with the terms of the authorisation. However, the key point is that there needs to be systematic openness about the proposed use of technological management. Regulatees need to be part of the process of setting the general terms and conditions for the use of technological management as well as for the adoption of particular measures of technological management; and there must be an ongoing transparency about the use of these instruments and about how the particular technologies work.

In relation to the four questions that structured my discussion, my principal conclusions are as follows. First, rules are as much instrumentalist as technological management in the reasoning that shapes their use; no one suggests that rules are necessarily in tension with the ideal of the Rule of Law; and no one should suppose that technological management is necessarily in tension with the ideal of the Rule of Law. Instrumentalist regulatory reasoning is not, in itself, a problem. Secondly, it is possible to reverse engineer the use of technological management so that either the underlying rule or policy assumed by the regulator or the underlying rule or policy that fits with the technology as implemented is exposed. If the underlying rule or policy (whether as intended or simply as reverse engineered) would violate the Rule of Law (on any reasonable interpretation), then it follows that the particular use of technological management is also incompatible with the Rule of Law. If, however, the underlying rule or policy would *not* violate the Rule of Law, this is not quite the end of the matter: the use of technological management might raise distinct concerns; and, while it is certainly a *necessary* condition for the acceptability of a particular use of technological management that the underlying rule or policy is compatible with the Rule of Law, it might not be *sufficient*. Thirdly, although the Fullerian principles of legality are focused on the use of rules as the regulatory instrument, the spirit of promulgation, of transparency, and of fair dealing that underlies Fuller's specification of his principles can be copied across to the use of technological management. In other words, the Fullerian principles demand that proposals for the use of technological management are promulgated with a view to facilitating public debate of both the underlying regulatory purpose and the particular technological fix to be applied; and, irrespective of whether the instrument of regulation is a rule or a technological fix, Fullerian principles condemn regulatory practices that are prone to trick or to trap regulatees. Fourthly, a community with moral aspirations might want to specify in their version of the Rule of Law that technological management should not be used (i) where, in a context of reasonable moral disagreement, it might put some regulatees in a position of being compelled to act against their conscience or (ii) where there is a danger that it will crowd out the space that regulatees need to debate and discuss what it is to do the right thing and duly to develop an independent moral judgment. Beyond that, moral communities will require the use of technological management to cohere with their particular fundamental values and commitments. That said, whatever the community's aspirations, and whatever their moral differences, it has to be understood that no kind of community is feasible unless the infrastructural conditions for human life and agency are secured. To this extent, there is a case for agreeing, within the Rule of Law compact, a special stewardship jurisdiction that includes authorisation for regulators to use measures of technological management in order to protect and promote these essential conditions.

Finally, the tentative nature of the sketch presented in this paper should be emphasised. My first thought about the relationship between, on the one hand, technological management and, on the other, the ideals of legality and the Rule of Law was that it would be futile—indeed, nonsensical—to attempt to apply principles drafted for a normative regulatory enterprise to a quite different non-normative regulatory environment. Certainly, there cannot be a literal or mechanical application. However, I now think that I underestimated how far the spirit of the Fullerian principles carries across to technological management and, in my concern to emphasise the radically different non-normative signals associated with technological management, I underestimated the significance of the underlying normative view. That said, this is very much work in progress and the only points about which I am really confident are that the ideals of legality and the Rule of Law matter as much as ever where regulators turn to technological management and that lawyers should be in the vanguard in working out how these historic ideals apply to a world where, as Will Hutton has put it, technology changes everything[107]—including, I would add, changing the nature of regulation itself.

[107] Will Hutton, *How Good We Can Be* (London: Little, Brown, 2015) at 17 et seq. Nb, too, the projected implications for the legal profession (indeed, for all professions) in Richard Susskind and Daniel Susskind, *The Future of the Professions* (Oxford: Oxford University Press, 2015).